



Eagle Mine Superfund Site Battle Mountain Proposed Development

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 8 DECEMBER 2006

Remedial Investigation Report Available for Public Review

Introduction

The Remedial Investigation Report for the North Property of the Eagle Mine Superfund Site is now available for public review. The North Property encompasses the northern portion of the Eagle Mine Superfund Site, located south of Minturn, Colo. The North Property historically received the waste (tailings) from the ore beneficiation (crushing, grinding, washing, extraction) operations during mining operations at the Eagle Mine from the 1880s until 1984. The North Property is referred to as the "Bolts Lake Character Area" in the Minturn planning process.

Specifically, the North Property includes the following areas: The Old Tailings Pile, Rex Flats, Maloit Park, Roaster Pile #5, and the Consolidated Tailings Pile areas, which were all part of the Eagle Mine operations. The North Property also includes Bolts Lake and the Highlands Area, which are located adjacent to features of the Eagle Mine. Please refer to the site map on page 4.

This Remedial Investigation Report documents the nature and extent of residual environmental contamination in the soil, surface water, groundwater, and air at areas of the North Property. This information will be used to determine what additional cleanup is necessary, should a proposed, residential golf development called Battle Mountain be approved by the town of Minturn and built at the site.

Ginn Battle North, the current owner of the North Property, and the company proposing the development, hired environmental consultants in

2005 and 2006 to conduct a Remedial Investigation. The U.S. Environmental Protection Agency (EPA) and the Colorado Department of Public Health and the Environment (CDPHE) provided oversight.

Report Details and Findings

Mining and remediation features

The mining and remediation features associated with the Eagle Mine Site within the North Property include:

- Consolidated Tailings Pile with its associated water treatment plant, water extraction trenches, diversion trenches, surge ponds, outfall, sludge cell, and temporary cell;
- Mine water transport pipeline that is located on an elevated trestle between Rex Flats and the water treatment plant;
- Abandoned tailings slurry pipeline located immediately south of the Old Tailings Pile that contains metals-laden sediment;
- Surface water diversion trenches located along the southern portion of the Old Tailings Pile;
- Water diversion berm and Bolts Ditch in the Highlands;
- Metals-stained boulders and tailings within the southern portions of Rex Flats and the Old Tailings Pile; and

- Groundwater monitoring system.

Key Tasks Performed

- Reviewed historical data collected from the Consolidated Tailings Pile;
- Collected surface soil samples from the Old Tailings Pile, Rex Flats, Bolts Lake, Maloit Park, and Roaster Pile #5 areas. Collected subsurface soil samples within the Old Tailings Pile, Rex Flats, and Bolts Lake areas.
- Installed 17 new groundwater monitoring wells and monitored the new and some existing wells over the course of the year;
- Collected hydrogeologic data including water levels, slug tests, and an aquifer test;
- Collected samples of other media including air, surface water, surface water diversion trenches seeps, boulders, and tailings slurry pipeline sediment; and
- Performed a geophysical survey to evaluate potential subsurface anomalies at the Rex Flats and Old Tailings Pile areas.

Human Health Risk Assessment

Consultants hired by the current property owner, Ginn Battle North, with oversight provided by EPA and CDPHE, conducted a Human Health Risk Assessment to determine the concentrations of metals in soil and water which could pose a concern to human health at the North Property. The assessment analyzed potential effects on long-term residents, recreational users, and on-site workers. The following Remediation Goals (RG) for each of the following metals were then developed for soil at the site:

In addition, CDPHE requested that a subset of samples be analyzed for an expanded list of analytes, such as aluminum, cyanide, and vanadium. Volatile and semi-volatile organic compounds were also analyzed for select soil and groundwater samples at the Old Tailings Pile and Rex Flats locations.

Extent of Contamination

Soil

Soil sampling results show that the Old Tailings Pile, Rex Flats, Roaster Pile #5, and areas of Maloit Park contain metals contamination exceeding remediation goals.

Overall, the soil, tailings, and boulders throughout the North Property pose a risk:

- To recreational site users, including rafters, hikers, fishermen and hunters;
- As runoff into the Eagle River during snow melt and precipitation events; and
- By leaching to the subsurface soil and groundwater.

Surface Water

Zinc is the primary contaminant of concern in surface water on the North Property, particularly in the Eagle River due to its negative impact on the trout population. While the zinc concentrations are generally higher in the Eagle River when it enters than when it exits the North Property, each segment of the Eagle River within the North Property has shown an increase in zinc concentration at least once during the remedial investigation. The localized increases in zinc concentrations are attributed to discharges to the river from seeps and groundwater in these areas, and possibly surface water runoff.

Metal	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Zinc
RG (mg/kg)	40	37	210	3,100	400	1,800	23,000

Additionally, copper exceeded the CDPHE standards for segments of the Eagle River within the North Property during the Spring 2006 sampling events, and lead exceeded standards during the June 2005 sampling event. Arsenic, chromium, and manganese were not detected above the standards during the 2005 or 2006 sampling events.

Although the segments of the Eagle River that transverse the North Property are classified as restricted access, on site activities of camping, hunting, fishing, and kayaking are common.

Groundwater

Groundwater beneath the Old Tailings Pile, Rex Flats, and historic Sump #3 areas continue to be contaminated by metals from the historic placement of mine tailings materials. Specifically, dissolved cadmium, zinc, manganese, arsenic, iron, sulfate, and pH in these areas exceed the CDPHE groundwater standards. The domestic use of groundwater in these areas is currently prohibited due to these exceedances. Groundwater in the Old Tailings Pile, Rex Flats, and historic Sump #3 flows into the Eagle River.

Groundwater beneath the Consolidated Tailings Pile is contaminated from the historic deposition of wet tailings at that location. Two groundwater extraction trenches intercept groundwater at the Consolidated Tailings Pile and return it to the water treatment plant for metals removal and eventual discharge to the Eagle River. Contaminated groundwater has been observed seeping on the downstream side of the north groundwater extraction trench in Maloit Park.

The analysis of groundwater samples collected during this investigation from wells located downgradient of the Consolidated Tailings Pile detected dissolved manganese above the CDPHE groundwater standard and dissolved manganese, copper, and zinc above Eagle River surface water standards.

Analysis of groundwater samples collected from Bolts Lake only detected dissolved manganese above the CDPHE groundwater and surface water standards.

Air Quality

The air quality data that were collected between July 21, 2005 and November 18, 2005 were compared to potentially applicable state and federal air quality standards. The air quality data collected during the period indicates that air quality levels were at or below applicable standards and criteria. On the basis of these data, there is not a current impact to air. This air data will be used as a baseline, should additional remediation be considered.

Background

EPA first listed the Eagle Mine and its surroundings, including the North Property, on the National Priorities List, or list of Superfund sites, in 1986. EPA and CDPHE oversaw an extensive environmental cleanup that was completed in 2001.

The purpose of the completed remedy for the Eagle Mine site was to control the transport of metals from various sources to the Eagle River and to groundwater. Residential development was not considered as a future use for the site at that time.

As a result, portions of the North Property remain a Superfund site primarily due to the presence of residual tailings and metals concentrations in the soil, surface water, and groundwater considered to be potentially harmful to human health. Access to the Eagle Mine Superfund Site is restricted.

Ongoing remediation activities on the North Property include groundwater extraction and treatment at the Consolidated Tailings Pile, continued revegetation monitoring, and remediation of an existing seep at the Old Tailings Pile. The water treatment facility is treating waters collected from the Eagle Mine site.

In 2004 Ginn Battle North approached EPA and CDPHE with a proposal to develop the North Property of the Eagle Mine Superfund Site into an private, residential, golf course and ski community. This proposed new use of the site as residential and recreational requires that additional cleanup actions are taken to ensure that residents, workers and visitors to the proposed development area are protected. EPA and CDPHE are requiring

that Ginn Battle North take the steps required in the Superfund process to allow for residential and recreational use on the North Property. This remedial investigation is an important piece of that process.

Next Steps

Based on the information gathered in the Remedial Investigation Report, a Feasibility Study is being performed to identify and evaluate the appropriate remedial alternatives to allow for residential and recreational use of the North Property. The public will be notified of its completion and provided a reasonable time for review.

EPA and CDPHE will then issue a Proposed Plan for cleanup. The Proposed Plan will analyze the alternatives discussed in the Feasibility Study and will present an alternative preferred by EPA. The public will be notified of the availability of the Proposed Plan and associated public comment period.

Finally, a Record of Decision will be issued detailing which cleanup alternative presented in the Proposed Plan has been selected. The Record of Decision will include a written response to public comments received.

Contacts

For more information, please contact:

Jennifer Chergo

Office of Communication and Public Involvement
The U.S. Environmental Protection Agency
999 18th Street, Ste. 300
Denver, CO 80202
(303) 312-6601
1-800-227-8917, ext. 6601
Chergo.jennifer@epa.gov

Mike Holmes

Remedial Project Manager
The U.S. Environmental Protection Agency
999 18th Street, Ste. 300
Denver, CO 80202
(303) 312-6607
1-800-227-8917, ext. 6607
holmes.michael@epa.gov

Wendy Naugle

On-Site Coordinator
The Colorado Department of Public Health and the Environment
4300 Cherry Creek Drive South
Denver, CO 80246
(303) 692-3394
Wendy.naugle@state.co.us
1-888-569-1831, ext. 3394

